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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,380	03/26/2004	Matthew P. Mitchell	COMBO1	8633
37623	7590	08/24/2006	EXAMINER	
MATTHEW P. MITCHELL 151 ALVARADO ROAD BERKELEY, CA 94705			DOERRLER, WILLIAM CHARLES	
			ART UNIT	PAPER NUMBER
			3744	
DATE MAILED: 08/24/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/810,380

Applicant(s)

MITCHELL, MATTHEW P.

Examiner

William C. Doerrler

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-14 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12-23-04, 6-18-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,2,5 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinmeyer et al in view of Funatsu et al.

Steinmeyer et al disclose applicant's basic inventive concept, a pulse tube cooler which has the cooling load contained within the envelope of the pressure vessel (the envelope of Steinmeyer is the cooling load), substantially as claimed with the exception of diffuser cones to straighten the flow of refrigerant in the pulse tube. Funatsu et al show this feature to be old in the pulse tube cooler art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Funatsu et al to modify the pulse tube with the cooling load as the envelope of tube of Steinmeyer by providing diffuser cones to straighten the flow of refrigerant to improve the cooling efficiency of the pulse tube. In regard to claims 11 and 12, it is noted that Steinmeyer et al is used to cool superconductive windings of an electromagnet.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinmeyer et al in view of Funatsu et al as applied to claims 1,2,5 and 11-14 above, and further in view of Frank et al.

Steinmeyer et al, as modified, disclose applicant's basic inventive concept, a pulse tube cooler with direct thermal contact between the refrigerant and the load, substantially as claimed with the exception of cooling motors and generators. Frank shows this feature to be old in the cooling art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Frank et al to modify the pulse tube cooler of Steinmeyer et al by cooling a motor or generator to ensure proper functioning of the motor or generator.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Steinmeyer et al in view of Funatsu et al as applied to claims 1,2,5 and 11-14 above, and further in view of Miller.

Steinmeyer et al, as modified, disclose applicant's basic inventive concept, a pulse tube cooler with direct thermal contact between the refrigerant and the load, substantially as claimed with the exception of cooling electric circuit components. Miller shows this feature to be old in the direct cooling art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Miller to modify the pulse tube cooler of Steinmeyer et al by cooling electric circuit components to ensure proper functioning of the components.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinmeyer et al in view of Funatsu et al as applied to claims 1,2,5 and 11-14 above, and further in view of Urano et al or Pundak.

Steinmeyer et al, as modified, disclose applicant's basic inventive concept, a pulse tube cooler with direct thermal contact between the refrigerant and the load, substantially as

claimed with the exception of cooling focal plane arrays. Urano et al (see paragraphs 60 and 66) and Pundak each show this feature to be old in the pulse tube cooling art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of either Urano et al or Pundak to modify the pulse tube cooler of Steinmeyer et al by cooling a focal plane array to ensure proper functioning of the focal plane array.

Allowable Subject Matter

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

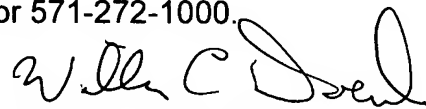
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reid and Worth show cooling systems which cool the load with direct contact between the refrigerant and the load. Bennett shows a thermoacoustic cooler for cooling electronics contained in the same housing as the cooler. Ravex and Kunitani show pulse tube coolers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



William C Doerrler
Primary Examiner
Art Unit 3744

WCD